

REMARKS

Claims 1-32 are currently pending in the application. Claims 1 – 32 are rejected.

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims Rejections – 35 U.S.C. 103

Claims 13 – 19, 20 – 21 are rejected over a mosaic of four citations, Iwatsuki, Codos, Rasmussen and Rezanka.

In response independent claims 1, 13 and 22 have been amended to recite that the printing machine is configured for printing on a textile media. The citations to Rasmussen and Rezanka are therefore believed to no longer be relevant as being outside the field of the skilled person.

The independent claims and the rejections thereon are now considered one by one in light of the above amendment.

Claim 13 teaches inter alia "an ironing unit located above said printing table assembly". Examiner alleges that such an ironing unit is taught in Rasmussen et al. However Rasmussen et al merely teaches in the passage quoted by the Examiner (col. 3 lines 32 – 38) that a piece of paper is kept flat. Rasmussen is more particular about the feature in column 6 lines 40 – 63 where he makes clear that he means nothing more than that the paper is passed for sandwiching or ironing between belts 32 and 202 after having been preheated. This is an arrangement that carries out pre-heating and then flattening but is not *above* the print zone 34 as required by the claim. On the contrary, as shown in figures 1, 2A – C, 3A – C and 4, the arrangement is in advance of the print zone, and in Fig. 5 is partly in advance and partly *beneath* the print zone. The teaching in Rasmussen et al would not in any event be considered by the skilled person wishing to iron textiles for the printing of the present invention because sandwiching between belts is not sufficient to iron textiles. Therefore the skilled person would not infer that he had anything to learn from Rasmussen to add to the mosaic of other documents. That is to that contrary to the Examiner's assertion that there is motivation to provide a flat and stable media for printing in order to improve image quality, the skilled person would

not see how Rasmussen's solution would work for anything other than paper, certainly not for textiles.

Claim 13 further teaches "wherein during said applying said printing table assembly passes by said array of inkjet nozzles in said back and forth movements and said array of inkjet nozzles is substantially static on said linear Y axis". The Examiner cites Rezanka against this feature. In particular Examiner cites Rezanka column 4 lines 52 – 55 which states "it has been found that printing speeds for liquid ink printers above ten pages per minute are possible using partial width arrays and or page width print bars such as the print bar 36." The relevance of this to the claimed feature is not apparent. On the contrary, in textile printing ten sheets per minute is an order of magnitude too fast. Rezanka by contrast actually teaches at column 3 lines 63 ~ 65 that the printhead is scanned in a reciprocating motion back and forth across the surface of the recording sheet. Given that the X direction is the direction of motion of the sheet, the perpendicular direction in which the printhead of Rezanka moves must be the Y direction, and therefore Rezanka teaches exactly the opposite of the claimed feature. As mentioned, the Examiner's alleged motivation of increasing print speeds is a not applicable since Rezanka is concerned with paper printing which in any event moves at an order of magnitude faster than textile printing. As an additional point, Rezanka teaches a part page width bar. In paper printing there are standard widths so it makes sense to talk of a page width bar. With textiles, there is such a range of sizes from a small child to a large adult, that it makes no sense to have a page width bar. The skilled person would thus dismiss Rezanka out of hand as being completely irrelevant to his field.

For both of these reasons claim 13 is believed to be inventive over the mosaic of documents posited by the Examiner.

Claims 1-3, 7-8, 22, and 27-28, 30, 31, and 32 were rejected under USC. 103(a) as being obvious over Iwatsuki et al (hereinafter: *Iwatsuki*) U.S. Patent Application No. 2003/0197772 in view of Morita et al (hereinafter: *Morita*) U.S. Patent No. 6,879,378, and Rozanka. In the light of the Examiner's remarks, in order to emphasize the inventiveness of the present claims in the light of the prior art.

Claim 1 teaches "wherein during said applying said printing table assembly passes by said array of inkjet nozzles in said back and forth movements and said array of

inkjet nozzles is substantially static on said linear Y axis". The Examiner cites Rezanka against this feature. In particular Examiner cites Rezanka column 4 lines 52 – 55 which states "it has been found that printing speeds for liquid ink printers above ten pages per minute are possible using partial width arrays and or page width print bars such as the print bar 36." The relevance of this to the claimed feature is not apparent. On the contrary, in textile printing ten sheets per minute is an order of magnitude too fast. Rezanka by contrast actually teaches at column 3 lines 63 – 65 that the printhead is scanned in a reciprocating motion back and forth across the surface of the recording sheet. Given that the X direction is the direction of motion of the sheet, the perpendicular direction in which the printhead of Rezanka moves must be the Y direction, and therefore Rezanka teaches exactly the opposite of the claimed feature. As mentioned, the Examiner's alleged motivation of increasing print speeds is a not applicable since Rezanka is concerned with paper printing which in any event moves at an order of magnitude faster than textile printing. As an additional point, Rezanka teaches a part page width bar. In paper printing there are standard widths so it makes sense to talk of a page width bar. With textiles, there is such a range of sizes from a small child to a large adult, that it makes no sense to have a page width bar. The skilled person would thus dismiss Rezanka out of hand as being completely irrelevant to his field.

For both of these reasons claim 1 is believed to be inventive over the mosaic of three documents posited by the Examiner.

Claim 22 likewise teaches " wherein during said applying said printing table assembly passes by said array of inkjet nozzles in said back and forth movements and said array of inkjet nozzles is substantially static on said linear Y axis." Rezanka, as explained above teaches in contradistinction to the claim that the inkjet nozzles reciprocate on the linear Y axis. Furthermore Rezanka is only from the non-related field of printing on paper. As mentioned, Rezanka teaches a part page width bar. In paper printing there are standard widths so it makes sense to talk of a page width bar. With textiles, there is such a range of sizes from a small child to a large adult, that it makes no sense to have a page width bar. The skilled person would thus dismiss Rezanka out of hand as being completely irrelevant to his field.

As previously explained, the *linear Y axis stage* of some of the present embodiments is designed to allow static positioning of the *array of inkjet nozzles* by several print passes while applying ink on a media loaded on said printing table assembly process, see page 9, lines 10-15 and Figs. 6a-c. The *linear X axis stage*, on the other hand, is designed to allow the moving of the *printing table assembly*, which is loaded with a printing media, back and forth by the drop-on-demand inject nozzles of the *array of inkjet nozzles*. In such a manner, the *array of inkjet nozzles* is static on said linear Y axis when it applies ink on the media during the aforementioned back and forth movements. Such a configuration is used in order to deal with the effect of acceleration on ink feed to the nozzles that exist, inter alia, in Iwatsuki. On the other hand, in *Iwatsuki* the reciprocal movement of the printing head in relation to the movement of the printed substrate requires high accelerations on the printhead and on the printed substrate that cause ink flow irregularities. Therefore, high accelerations of the printhead, above the substrate, may reduce the quality of the image, which is printed on the substrate because the acceleration interferes with the feed of ink to the nozzles. The quality of the printed image is reduced as smearing and white striping may incur during the printing process if the acceleration forces experienced by the printhead or the platen device exceeds a certain speed level.


Such a force (acceleration) limitation does not apply when the printing is performed using the claimed invention. In the claimed invention, the printhead, which is *an array of inkjet nozzles*, is designed to be static on said linear Y axis when it applies ink at selected spots on the printed substrate and the accelerations of the printhead are transferred to the printed substrate. As the *array of inkjet nozzles* is static on said linear Y axis during the printing process, the flow of ink into the nozzles is smooth and the printed image on the printed substrate is not smeared as happens when ink is delivered by a moving *array of inkjet nozzles*, for example in *Iwatsuki*, see paragraph [0065] of the present application.

It should be noted that none of the citations mentioned by the Examiner, or the combination thereof, disclose an X motion printing device with a Y motion printhead which is static during applying of ink on a media loaded on a printing table assembly, as defined by present amended claims 1, 13, and 22. Rezanka on the contrary clearly teaches that the print head reciprocates, as explained above.

Claims 1, 13 and 22 are believed to be inventive for the reasons given above. The remaining claims are believed to be allowable as being dependent on allowable main claims.

All of the matters raised by the Examiner have been dealt with and are believed to have been overcome. In view of the foregoing, it is respectfully submitted that all the claims now pending in the application are allowable over the cited reference. No new matter is added by the present amendments. An early Notice of Allowance is therefore respectfully requested.

Respectfully submitted,



Martin D. Moynihan

Registration No. 40,338

Date: September 11, 2007

Encl:

Petition for Extension (1 Month)